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Characterization of chemical ingredients and anticonvulsant activity of American skullcap (Scutellaria lateriflora) (Abstract)

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Characterization of chemical ingredients and anticonvulsant activity of American skullcap (Scutellaria lateriflora)

Abstract

American skullcap (the aerial part of Scutellaria lateriflora L.) has been traditionally used by Native Americans and Europeans as a nerve tonic, sedative, and anticonvulsant. However, despite some previous studies, the quality and safety, the bioactive ingredients, and the pharmacological properties of American skullcap are not fully understood. The aims of this study were to characterize the chemical ingredients of American skullcap and to evaluate its anticonvulsant activity. Twelve phenolic compounds including 10 flavonoids and two phenylethanoid glycosides were isolated and identified from American skullcap and used as marker compounds. An HPLC analytic method for analyzing these marker compounds in commercial American skullcap products from different sources was established and validated. The anticonvulsant activity of American skullcap was determined in rat models of acute seizures induced by pilocarpine and pentylenetetrazol. The results from this study indicate that (1) phenolic compounds, especially flavonoids, are the predominant constituents in American skullcap; (2) American skullcap products have similar constituents, but the content and relative proportions of the individual constituents varies widely; and (3) American skullcap has anticonvulsant activity in rodent models of acute seizures.